DEVELOPING MOBILE APPS FOR RAIL-BASED PUBLIC TRANSPORT IN KLANG VALLEY

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DEVELOPING MOBILE APPS FOR RAIL-BASED PUBLIC TRANSPORT IN KLANG VALLEY

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This project is one of the requirements for

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The project entitled ‘Developing Mobile Apps For Rail-Based Public Transport’ was prepared by Loke Xue Hui and submitted to the Faculty of Applied and Creative Arts in partial fulfillment of the requirements for a Bachelor of Applied Arts with Honours (Design Technology).

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(Miss Noorhaslina Binti Senin)

Date:

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CONTENTS

CHAPTER 2 LITERATURE REVIEW

CHAPTER 3 RESEARCH METHODOLOGY

CHAPTER 4 RESEARCH METHODOLOGY

CHAPTER 5 DESIGN PROPOSAL

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The people in Malaysia has encouraged by government to use public transport as the main transportation. However, there are a lot of problems encountered by the train users in Malaysia. Thus, the objective of this research is to identify the problems encountered by users when using railed-based public transport and propose a suitable solution through a mobile application for railed-based public transport. The study also focuses on visual design and main function of the mobile app. The research is conducted around the Klang Valley area. The findings showed that, there are no real-time schedules of the train, no delay information, users are often confused by the train routes and so on. In this study, the main feature of the mobile app is proposed through the findings of the research. Thus, the proposed mobile app can help the users in gaining information such as time and directions of the train route, ticket purchasing through apps and real-time train schedule.

Keywords: Public Transport, Mobile App, Train

ABSTRAK

Rakyat Malaysia digalakkan menggunakan pengangkutan awam sebagai pengangkutan utama oleh kerajaan. Walau bagaimanapun, terdapat banyak masalah yang dihadapi oleh pengangkutan transit rel di Malaysia. Oleh itu, penyelidikan ini bertujuan untuk mengenalpasti masalah yang dihadapi oleh pengguna apabila menggunakan pengangkutan transit rel dan seterusnya mencadangkan penyelesaian yang sesuai melalui aplikasi mobil. Kajian ini juga memberi tumpuan kepada reka bentuk visual dan fungsi utama aplikasi mobil. Penyelidikan ini dijalankan di sekitar kawasan Lembah Klang. Hasil pengajian menunjukkan bahawa pengguna menghadapi masalah seperti ketiadaan jadual masa pengangkutan transit rel, tiada maklumat tundaan; pengguna sering keliru dengan laluan transit dan sebagainya. Fungsi utama aplikasi mobil ini dicadangkan melalui keputusan kajian. Oleh itu, rekaan yang dihasilkan dapat memudahkan pengguna mendapatkan pelbagai maklumat serperti masa dan cara perjalanan, pembelian tiket melalui aplikasi mobil and jadual terkini transit rel.

Kata Kunci: Pengangkutan awam, Mobile Aplikasi, Pengangkutan Rel Transit

CHAPTER 1

INTRODUCTION

1.1 Background

The high demand of fossil fuel has becoming an important world concern issue nowadays. The transportation system in Malaysia is very complex and mostly using fossil fuels. However, there are many ways in minimizing the use of fossil fuel in our daily life. Encouraging the use of public transport can be one of the ways to optimize the consumption of the energy. Thus, the aim of this study is to develop an interactive mechanism that can provide the latest state of rail-based public transport for the routes that are selected.

According to Syed Jaymal Zahiid (2016), Kuala Lumpur is around 243 square kilometers big. Based on the statistic given by Land and Public Transport Commission (Spad), Malaysia's current urban railway systems are covering approximately 80 kilometers, including Light Rail Transit (LRT), Monorail, Mass Rapid Transit (MRT), Komuter Tanah Melayu (KTM) and KLIA Express.

1.1.1 The Evolution of Rail Transit Network in Malaysia

The role of additional public transport has becoming more important and more important with the rapid population growth of urban and the increasing of traffic congestion in city. Ever since 1995, Malaysia's rail-based public transport has been broadly used in Kuala Lumpur and Klang Valley. The earliest rail system that existed in Malaysia is Keretapi Tanah Melayu, KTM. According to KTM (2017), the first section of Malaysian Railway started its operation during 1880 and KTM is finally formed in year 1948. In 1992, KTM was

corporatized and renamed to Keretapi Tanah Melayu Berhad (KTMB). There are two types of railway service under KTMB, which are KTM ETS and KTM Komuter. KTM ETS is an inter-city rail service that using multiple units of electricity while KTM Komuter was introduced in 1995 to provide local rail services in Kuala Lumpur and Klang Valley. The first line that operated by KTM Komuter is the Seremban line, which runs from Rawang station and ends at Seremban. This nearly 160 km long route consists of 3 more stations which are Kepong Sentral, KL Sentral and Midvalley. The Seremban line is then expanded to Rembau in 2007. The second line of KTM, Port Klang Line started its operation in 14 August 1995. It runs nearly 45 km from Batu Caves to Port Klang.

Figure 1.1 The KTM route in Malaysia is nearly 160 km long.

In 1996, the Light Rail Transit (LRT) that operated by Rapid Rail was introduced. There were two hinged and medium capacity rapid transit routes which are the Ampang Line and Sri Petaling Line. The extension project of Sri Petaling Line is divided into two stages which Sri Petaling is extended to Bandar Kinrara in 2015 while stage two was finished in 2016 with the extension to Putra Heights. In November 2011, the Kelana Jaya line was integrated into the Ampang Line. There are total of 24 elevated light rail stations and 5 underground stations with Subang Depot as the first station until Putra Terminal. Finally, the

primary network of Kuala Lumpur has formed a loop by the joining of Putra Height with Sri Petaling Line in 2016 (Ding, Ujang, Hamid, & Wu, 2015).

Figure 1.2 Light Rail Transit (LRT) is introduced in year 1996 and it is operated by Rapid Rail.

The Klang Valley Mass Rapid Transit (KVMRT) project was proposed in the 10th Malaysia Plan (Onn, Mohamed Rehan Karim & Sumiani Yusoff, 2014). Based on Pemandu (2016), the aim of KVMRT project is to transform Klang Valley into one of the world's top convenient city by 2020. There will be a total of 3 lines to run through areas within a radius of 20 km from centre of the city, with total of 141 km routes. The first MRT line which departs from Sungai Buloh and ends at Kajang, was fully operating in July 2017. It is expected to transport around 400,000 passengers per day.

Figure 1.3 MRT Line started its operation in year 2017 (Yusof Mat Isa, 2017).

In 2003, KL Monorail started operating. It is the only urban monorail system in Malaysia with the length of 8.6 km and total of 11 stations. It was linked to KL Sentral Station since year 2003 and runs through the popular shopping paradise in Malaysia which is the Bukit Bintang area and the midtown of Kuala Lumpur. (Ding, Ujang, Hamid, & Wu, 2015). Back in year 2012, there were 2 type of flagship service was launched by Express Rail Link Sdn Bhd (ERL) which are the KLIA Express and KLIA Transit. ERL has managed to run 6500 trips averagely per month and travelled more than 66 million kilometers. Besides that, they also managed to minimize their cancelled trips to less than two in a month (KLIA Express, 2017). KLIA Express train is a connection that allows travelers to travel from airports of Kuala Lumpur to the city center. Based on Wonderful Malaysia (2017), the total travelling time is about 30 minutes, 57 kilometers long and the train will stops at KL Sentral which located at city center. KL Sentral is Malaysia's biggest transit hub that links all the urban and suburban transits. There are some modern facilities or services that can be found in KLIA Express including TV-screens. It is a more luxurious train compared to KLIA Transit. Unlike KLIA Express that goes straight to KL Sentral, KLIA Transit has 3 stops before reaching KL Sentral. It takes about 35 minutes per trip and it is widely used by people who live in Kuala Lumpur.

Figure 1.4 KL Monorail Line is the only monorail system in Malaysia (Sika, n.d.).

Figure 1.5 KLIA Express is the train line that connects KL International Airports with the KL city center (Pakde, 2010).

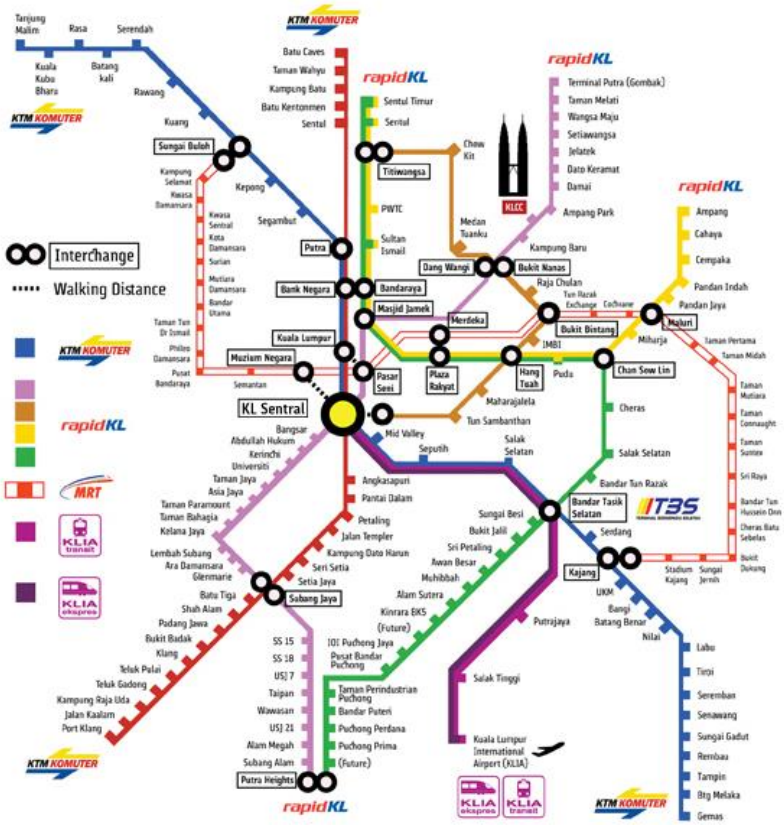

Figure 1.6 The latest Kuala Lumpur Train Map in year 2017 (KL City Guide, 2017).

1.1.2 Railway Transit Apps in Malaysia

The invention of mobility apps has provided a new habits or lifestyle nowadays. In the early years of mobile apps, users usually will download an app that allows them to refer the public transit schedules and check for static information. Now, with the availability of mobile data and GPS location services, users can get directions and destination information on real-time information (Shaheen, Martin, Cohen, Musunuri & Bhattacharyya, 2016). In Malaysia, there are a number of public transport apps that can be found such as Malaysia Map for LRT & Train, KL Transit and others. However, based on the apps review in Google Play Store, most of the schedule and arrival time that provided by the apps are not up to date; the time provided in the apps is out of synchronization.

Figure 1.7 Existing railway transit apps in Malaysia (Google Play, n.d.)

1.1.3 Fares and Payment Method

LRT, Monorail and MRT users can purchase a token from a machine which available in all stations for a single or return journey. MyRapid Season Pass is a card that allows users to travel as many rides as he or she wants within 30 days. Besides that, MyRapid card was also widely used by regular public transport users, which allows users to store their money in it (Shamsunahar, 2015). However, MyRapid Card is officially replaced by the new MyRapid TnG (Touch n Go) on 15 July 2017. This new MyRapid TnG card is similar to Touch n' Go card, which is prepaid-stored value card that can be used for all Malaysia's highway toll. It is valid on all Rapid KL services in such as Rapid KL buses, LRTs, Monorail, MRT and KTM (Change MyRapid card, 2017). For KTM, users can purchase the ticket online, at front counter or use Touch n'Go card (Shamsunahar, 2015).

Figure 1.8 MyRapid TnG (Left) is valid for all railway station in Malaysia while Token (Right) is only valid for Rapid KL Trains (MyRapid, n.d.).

1.2 Problem Statement

As a city that become the pillar of the national economic growth and landmark of Malaysia, Kuala Lumpur has undergo urbanization and gives a lot of contribution. The increasing demand of vehicle ownership and utilization has resulted in traffic congestion and environment pollution in Malaysia. Thus, people are encouraged by government to use public transport in order to reduce the current traffic jamming. However, private vehicle remain as Malaysian's main transportation due to various factors that related to public transport's bad service (Ismail, R., Hafezi, M. H., Nor, R. M., & Ambak, K.). Due to the lack of information such as train delays and schedule updates, the train users are often unable to plan their travel journey properly. Incidents such as sudden close of LRT station have causes trouble for train users as they don't receive any instant updates (The Star, 2017).

1.3 Research Question

1. What are the problems encountered by users when using railed-based public transport?
2. How can mobile apps solve the current problem faced by the user?
3. What are the important features to consider when designing the application?
4. How does user interact with the proposed apps?

1.4 Research Objectives

1. To identify the problems encountered by users when using railed-based public transport.
2. To analyze the existing railed-based public transport apps.
3. To develop an application for railed-based public transport in Malaysia.
4. To validate the proposed apps.